

**AMENDMENTS TO THE CLAIMS**

Claims 1-97 (cancelled).

Claim 98 (new): A computer-implemented method for generating a continuous mathematical model of a feature common to subjects in a subject group, the method comprising:

determining a plurality of sample data sets corresponding to the subjects in the subject group;

determining, from the sample data sets, a plurality of values for one or more mathematical parameters corresponding to one or more basis functions for the continuous mathematical model; and

determining, from the values for the one or more mathematical parameters, one or more distribution-function parameters for specifying one or more distribution functions for the one or more mathematical parameters, wherein a summation of the one or more basis functions multiplied by sampled values of the one or more distribution functions provides the continuous mathematical model of the feature.

Claim 99 (new): A method according to claim 98, wherein determining the sample data sets includes receiving the sample data sets from an external data source and storing the sample data sets in a computer memory.

Claim 100 (new): A method according to claim 99, wherein determining the sample data sets includes measuring values for the feature and storing the values for the feature in the external data source.

Claim 101 (new): A method according to claim 100, wherein measuring the values for the feature includes measuring values of blood pressure for the subjects in the subject group.

Claim 102 (new): A method according to claim 98, wherein determining the values for the one or more mathematical parameters includes:

determining initial values for the one or more mathematical parameters according to an optimization criterion;

separating the initial values into bins with corresponding bin values; and

determining the values for the one or more mathematical parameters by replacing the initial values with the bin values.

Claim 103 (new): A method according to claim 98, wherein determining the values for the one or more mathematical parameters includes calculating the values for the one or more mathematical parameters from the sample data sets according to an optimization criterion.

Claim 104 (new): A method according to claim 98, wherein determining the one or more distribution-function parameters includes calculating the one or more distribution-function parameters from the values for the one or more mathematical parameters according to an optimization criterion.

Claim 105 (new): A method according to claim 98, further comprising:  
simulating the feature by generating sampled values of the distribution functions by computer; and  
displaying at least one statistical property of the simulated feature.

Claim 106 (new): A method according to claim 98, wherein determining the values for the one or more mathematical parameters corresponding to the one or more basis functions includes:

selecting a plurality of initial basis functions;

determining a plurality of values for a plurality of mathematical parameters corresponding to the initial basis functions;

determining, from the values for the mathematical parameters corresponding to the initial basis functions, a correlation matrix for the initial basis functions; and

determining, from the correlation matrix, the one or more basis functions according to a de-correlation criterion.

Claim 107 (new): A method according to claim 98, wherein  
the feature is a first feature selected from a plurality of features; and  
values for the features other than the first feature and values for the one or more  
distribution-function parameters specify the one or more distribution functions for the one or more  
mathematical parameters.

Claim 108 (new): A method according to claim 107, further comprising:  
simulating the first feature by computer, for given values of the features other than  
the first feature, by generating sampled values of the one or more distribution functions; and  
displaying at least one statistical property of the simulated first feature.

Claim 109 (new): A method according to claim 98, wherein the one or more basis  
functions include a single basis function and the summation includes a single term.

Claim 110 (new): A method according to claim 98, wherein the one or more basis  
functions include a plurality of orthogonal functions over a continuous interval.

Claim 111 (new): A method according to claim 98, wherein the one or more basis  
functions include one or more hybrid functions that characterize features common to the subject  
group over a continuous interval.

Claim 112 (new): A method according to claim 111, wherein  
the continuous mathematical model of the feature includes a model for occlusion of  
a coronary artery over the continuous interval, and  
the one or more hybrid functions include a first function for blood pressure and a  
second function for cholesterol level.

Claim 113 (new): A method according to claim 112, wherein the one or more hybrid functions include a third function for a product of the blood pressure and the cholesterol level.

Claim 114 (new): A method according to claim 98, wherein a computer determines the values for the one or more mathematical parameters and the one or more distribution-function parameters.

Claim 115 (new): A method according to claim 98, wherein the subjects are biological subjects and the feature is a biological feature.

Claim 116 (new): A method according to claim 98, wherein the one or more distribution functions include at least one normal distribution function and the one or more distribution-function parameters include at least one corresponding standard-deviation parameter.

Claim 117 (new): An apparatus for generating a continuous mathematical model of a feature common to subjects in a subject group, the apparatus comprising executable instructions for:

determining a plurality of sample data sets corresponding to the subjects in the subject group;

determining, from the sample data sets, a plurality of values for one or more mathematical parameters corresponding to one or more basis functions for the continuous mathematical model; and

determining, from the values for the one or more mathematical parameters, one or more distribution-function parameters for specifying one or more distribution functions for the one or more mathematical parameters, wherein a summation of the one or more basis functions multiplied by sampled values of the one or more distribution functions provides the continuous mathematical model of the feature.

Claim 118 (new): An apparatus according to claim 117, wherein determining the sample data sets includes receiving the sample data sets from an external data source and storing the sample data sets in a computer memory.

Claim 119 (new): An apparatus according to claim 118, wherein the sample data sets include values of blood pressure for the subjects in the subject group

Claim 120 (new): An apparatus according to claim 117, wherein determining the values for the one or more mathematical parameters includes:

determining initial values for the one or more mathematical parameters according to an optimization criterion;

separating the initial values into bins with corresponding bin values; and

determining the values for the one or more mathematical parameters by replacing the initial values with the bin values.

Claim 121 (new): An apparatus according to claim 117, wherein determining the values for the one or more mathematical parameters includes calculating the values for the one or more mathematical parameters from the sample data sets according to an optimization criterion.

Claim 122 (new): An apparatus according to claim 117, wherein determining the one or more distribution-function parameters includes calculating the one or more distribution-function parameters from the values for the one or more mathematical parameters according to an optimization criterion.

Claim 123 (new): An apparatus according to claim 117, further comprising executable instructions for:

simulating the feature by generating sampled values of the distribution functions;

and

displaying at least one statistical property of the simulated feature.

Claim 124 (new): An apparatus according to claim 117, wherein determining the values for the one or more mathematical parameters corresponding to the one or more basis functions includes:

- selecting a plurality of initial basis functions;
- determining a plurality of values for a plurality of mathematical parameters corresponding to the initial basis functions;
- determining, from the values for the mathematical parameters corresponding to the initial basis functions, a correlation matrix for the initial basis functions; and
- determining, from the correlation matrix, the one or more basis functions according to a de-correlation criterion.

Claim 125 (new): An apparatus according to claim 117, wherein

- the feature is a first feature selected from a plurality of features; and
- values for the features other than the first feature and values for the one or more distribution-function parameters specify the one or more distribution functions for the one or more mathematical parameters.

Claim 126 (new): An apparatus according to claim 125, further comprising executable instructions for:

- simulating the first feature by computer, for given values of the features other than the first feature, by generating sampled values of the one or more distribution functions; and
- displaying at least one statistical property of the simulated first feature.

Claim 127 (new): An apparatus according to claim 117, wherein the one or more basis functions include a single basis function and the summation includes a single term.

Claim 128 (new): An apparatus according to claim 117, wherein the one or more basis functions include a plurality of orthogonal functions over a continuous interval.

Claim 129 (new): An apparatus according to claim 117, wherein the one or more basis functions include one or more hybrid functions that characterize features common to the subject group over a continuous interval.

Claim 130 (new): An apparatus according to claim 129, wherein  
the continuous mathematical model of the feature includes a model for occlusion of a coronary artery over the continuous interval, and  
the one or more hybrid functions include a first function for blood pressure and a second function for cholesterol level.

Claim 131 (new): An apparatus according to claim 130, wherein the one or more hybrid functions include a third function for a product of the blood pressure and the cholesterol level.

Claim 132 (new): An apparatus according to claim 117, wherein the subjects are biological subjects and the feature is a biological feature.

Claim 133 (new): An apparatus according to claim 117, wherein the one or more distribution functions include at least one normal distribution function and the one or more distribution-function parameters include at least one corresponding standard-deviation parameter.

Claim 134 (new): A computer-readable medium that stores a computer program for generating a continuous mathematical model of a feature common to subjects in a subject group, the computer program comprising instructions for:

determining a plurality of sample data sets corresponding to the subjects in the subject group;

determining, from the sample data sets, a plurality of values for one or more mathematical parameters corresponding to one or more basis functions for the continuous mathematical model; and

determining, from the values for the one or more mathematical parameters, one or more distribution-function parameters for specifying one or more distribution functions for the one or more mathematical parameters, wherein a summation of the one or more basis functions multiplied by sampled values of the one or more distribution functions provides the continuous mathematical model of the feature.

Claim 135 (new): A computer-readable medium according to claim 134, wherein determining the sample data sets includes receiving the sample data sets from an external data source and storing the sample data sets in a computer memory.

Claim 136 (new): A computer-readable medium according to claim 135, wherein the sample data sets include values of blood pressure for the subjects in the subject group

Claim 137 (new): A computer-readable medium according to claim 134, wherein determining the values for the one or more mathematical parameters includes:

determining initial values for the one or more mathematical parameters according to an optimization criterion;

separating the initial values into bins with corresponding bin values; and

determining the values for the one or more mathematical parameters by replacing the initial values with the bin values.

Claim 138 (new): A computer-readable medium according to claim 134, wherein determining the values for the one or more mathematical parameters includes calculating the values for the one or more mathematical parameters from the sample data sets according to an optimization criterion.

Claim 139 (new): A computer-readable medium according to claim 134, wherein determining the one or more distribution-function parameters includes calculating the one or more



distribution-function parameters from the values for the one or more mathematical parameters according to an optimization criterion.

Claim 140 (new): A computer-readable medium according to claim 134, wherein the computer program further comprises instructions for:

simulating the feature by generating sampled values of the distribution functions;

and

displaying at least one statistical property of the simulated feature.

Claim 141 (new): A computer-readable medium according to claim 134, wherein determining the values for the one or more mathematical parameters corresponding to the one or more basis functions includes:

selecting a plurality of initial basis functions;

determining a plurality of values for a plurality of mathematical parameters corresponding to the initial basis functions;

determining, from the values for the mathematical parameters corresponding to the initial basis functions, a correlation matrix for the initial basis functions; and

determining, from the correlation matrix, the one or more basis functions according to a de-correlation criterion.

Claim 142 (new): A computer-readable medium according to claim 134, wherein the feature is a first feature selected from a plurality of features; and values for the features other than the first feature and values for the one or more distribution-function parameters specify the one or more distribution functions for the one or more mathematical parameters.

Claim 143 (new): A computer-readable medium according to claim 142, wherein the computer program further comprises instructions for:

simulating the first feature, for given values of the features other than the first feature, by generating sampled values of the one or more distribution functions; and  
displaying at least one statistical property of the simulated first feature.

Claim 144 (new): A computer-readable medium according to claim 134, wherein the one or more basis functions include a single basis function and the summation includes a single term.

Claim 145 (new): A computer-readable medium according to claim 134, wherein the one or more basis functions include a plurality of orthogonal functions over a continuous interval.

Claim 146 (new): A computer-readable medium according to claim 134, wherein the one or more basis functions include one or more hybrid functions that characterize features common to the subject group over a continuous interval.

Claim 147 (new): A computer-readable medium according to claim 146, wherein  
the continuous mathematical model of the feature includes a model for occlusion of a coronary artery over the continuous interval, and  
the one or more hybrid functions include a first function for blood pressure and a second function for cholesterol level.

Claim 148 (new): A computer-readable medium according to claim 147, wherein the one or more hybrid functions include a third function for a product of the blood pressure and the cholesterol level.

Claim 149 (new): A computer-readable medium according to claim 134, wherein the subjects are biological subjects and the feature is a biological feature.

Claim 150 (new): A computer-readable medium according to claim 134, wherein the one or more distribution functions include at least one normal distribution function and the one or more distribution-function parameters include at least one corresponding standard-deviation parameter.